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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,135	01/18/2002	William J. Cote	BUR919980100US2	2527

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 07/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,135

Applicant(s)

COTE ET AL.

Examiner

Michael A Marcheschi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29,32 and 33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 29,32 and 33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/7/03 has been entered.

Claim 32 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 32 is indefinite because it depends on a higher numbered claim.

The disclosure is objected to because of the following informalities:

The specification does not define the continuing data, as required. Appropriate correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mravic et al.

Mravic et al. teach in claims 21, 22, 23 and 27, a method of polishing a substrate comprising polishing the substrate with a first slurry which comprises an abrasive, an oxidizer, an acid and water, followed by polishing the substrate with a second slurry comprising an abrasive, an oxidizer, an acid and water. It is implied in claim 27 that the first and second slurries can also contain a corrosion inhibitor which reads on the claimed oxidation inhibitor (benzotriazole-see column 6, lines 63+) and a surfactant. The types of abrasive that can be used in the first and second slurries include silica and alumina. Column 6, lines 10-16 states that the oxidizer used in the first and second slurries include ferric nitrate and hydrogen peroxide.

The reference teaches a reasonably similar method of polishing using two different slurries; wherein each slurry has a specific pH. As set forth above, the first slurry comprises an abrasive, which can be alumina, and oxidizer, which can be ferric nitrate, benzotriazole, a surfactant and water and the second slurry comprises an abrasive, which can be silica, an oxidizer, which can be hydrogen peroxide, benzotriazole, a surfactant and water. Although the reference does not literally define what the abrasive and oxidizer of the first and second slurries are, the reference provides examples of abrasives and oxidizers which can be used in either of the slurries. Since the claimed materials are defined in these listings, it is the examiners position that the compositions of the claimed first and second slurries are reasonably suggested by the reference in the absence of any evidence showing criticality for the claimed first and second compositions. Although the pH values defined by the reference are slightly outside the claimed values, the reference modifies the pH values with the term “**about**” and therefore no patentable

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distinction is seen to exist in the absence of any critical evidence showing the contrary because "about" **permits some tolerance**, *In re Ayers*, 154 F 2d 182, 69 USPQ 109. The reference teaches that a surfactant is used in the slurries and although the claimed specific one is not defined, the recitation of "a surfactant", in general, makes the claimed sodium octyl sulfate obvious in the absence of any numerical evidence showing criticality for this specific surfactant. This is apparent because **"A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971)".** In view of this, the limitations of claim 29 are met. With respect to the limitation of claim 33, although the reference states that the removal rates are **approximately** equal, it is the examiners position that the phrase "approximately equal" does not necessarily mean that the rate are equal because **"approximately"** means that one rate can be slightly greater than the other, thus reading on the above claim.

Claims 29 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over either (1) Kaufman et al. (416) and Kaufman et al. (306).

Kaufman et al. (416) teach in column 4, line 55-column 9, line 40 and column 11, line 60-column 12, line 5, a method of polishing a substrate comprising polishing the substrate with a first slurry which comprises an abrasive, an oxidizer, benzotriazole (which reads on the claimed oxidation inhibitor), a surfactant and water, followed by polishing the substrate with a second slurry comprising an abrasive, an oxidizer, benzotriazole (which reads on the claimed oxidation inhibitor), a surfactant and water. The types of abrasive that can be used in the first and second

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slurries include silica and alumina. Column 5, lines 17-30 and column 7, line 60-column 8, line 5 states that the oxidizer used in the first and second slurries include compounds which contain an element in its highest oxidation state and hydrogen peroxide.

Kaufman et al. (306) teach in column 4, line 58-column 9, line 30 and column 11, lines 49-64, a method of polishing a substrate comprising polishing the substrate with a first slurry which comprises an abrasive, an oxidizer, benzotriazole (which reads on the claimed oxidation inhibitor), a surfactant and water, followed by polishing the substrate with a second slurry comprising an abrasive, an oxidizer, benzotriazole (which reads on the claimed oxidation inhibitor), a surfactant and water. The types of abrasive that can be used in the first and second slurries include silica and alumina. Column 5, lines 16-30 and column 7, lines 5-66 states that the oxidizer used in the first and second slurries include compounds which contain an element in its highest oxidation state and hydrogen peroxide.

The references teach reasonably similar methods of polishing using two different slurries, wherein each slurry has a specific pH. As set forth above, the first slurry comprises an abrasive, which can be alumina, and oxidizer, which can be a compound which contains an element in its highest oxidation state, benzotriazole, a surfactant and water and the second slurry comprises an abrasive, which can be silica, an oxidizer, which can be hydrogen peroxide, benzotriazole, a surfactant and water. Although the references do not literally define that the oxidizer includes ferric nitrate, it is the examiners position that the limitation that the oxidizer "is a compound which contains an element in its highest oxidation state" broadly reads on and therefore makes obvious ferric nitrate because ferric nitrate is a compound that which contains iron (an element) in its highest oxidation state. Although the references do not literally define what the

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abrasive and oxidizer of the first and second slurries are, the reference provides examples of abrasives and oxidizers which can be used in either of the slurries. Since the claimed materials are defined or suggested in these listings, it is the examiners position that the compositions of the claimed first and second slurries are reasonably suggested by the references in the absence of any evidence showing criticality for the claimed first and second compositions. The references teach that a surfactant is used in the slurries and although the claimed specific one is not defined, the recitation of "a surfactant", in general, makes the claimed sodium octyl sulfate obvious in the absence of any numerical evidence showing criticality for this specific surfactant. This is apparent because **"A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971)".** In view of this, the limitations of claim 29 are met. With respect to the limitations of claims 32 and 33, they are encompassed by the references in column 11, lines 49-52 of Kaufman et al. (416) and column 11, lines 39-41 of Kaufman et al.(306). From these teachings, the removal rate of the barrier layer is desirably high and the removal rate of the copper layer is desirably low. The broad interpretation of this encompasses the limitations of claims 32-33 in the absence of any evidence showing the contrary.

In view of the teachings as set forth above, it is the examiners position that the references reasonably teach or suggest the limitations of the rejected claims.

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Applicant's arguments filed 5/7/03 have been fully considered but they are not persuasive.

Applicants argue that the two Kaufman et al. references do not teach the use of sodium octyl sulfate as the surfactant. The examiner acknowledges this but, as defined above, the references teach that a surfactant is used in the slurries and although the claimed specific one is not defined, the recitation of "a surfactant", in general, makes the claimed sodium octyl sulfate obvious in the absence of any numerical evidence showing criticality for this specific surfactant. This is apparent because **"A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971)".** In view of this, the limitations of claim 29 are met. Applicants also argue that the use of sodium octyl sulfate is essential to the claimed invention in order to provide the desired removal rates. Although this may be the case (examiner is not agreeing with applicants), **applicants provide no numerical evidence (comparative testing) to support this and the statement defined on page 9, line 28-page 10, line 8 is not sufficient evidence to show criticality.** Applicants must provide some evidence to support this statement and show criticality for the claimed specific surfactant. Finally, applicants state that the use of this surfactant provides the desired removal rate (i.e. it appears from this response that it is argued that only the claimed surfactant works to provide the desired removal rates). This apparent argument is not persuasive because in the two Kaufman et al. references (column 11, lines 49-52 of Kaufman et al. (416) and column 11, lines 39-41 of Kaufman et al.(306)) it is shown that the removal rate of the barrier layer is desirably **high** and the removal rate of the copper layer is

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desirably **low**. If the compositions of the two Kaufman et al. references provide the claimed removal rates without limiting the surfactant type, how can it be argued that only the claimed specific surfactant is essential to provide the claimed removal rate? In other words, since the compositions of the references have the claimed removal rate and the surfactant is not limited, it can be seen that numerous surfactants can provide the claimed removal rates contrary to applicants apparent argument that only sodium octyl sulfate provides this removal rate.

In the previous office actions, the examiner has not commented on applicant remarks with respect to the Mravic et al. reference. However, at this time the examiner will address these remarks. Applicants argue in the 11/21/02 response that Mravic et al. does not teach the limitation "removal of the barrier layer or liner at a greater rate than the removal of the copper". **First**, this limitation is not in the independent claim and **second** although the reference states that the removal rates are **approximately** equal, it is the examiners position that the phrase "approximately equal" does not necessarily mean that the rate are equal because "**approximately**" means that one rate can be slightly greater than the other, thus reading on this limitation. Applicants also argue the teachings in column 9, lines 58-60 of this reference. However, these teaching are for a preferred embodiment (example) and as is well known "**A reference can be used for all it realistically teaches and is not limited to the disclosure in its preferred embodiments**" See *In re Van Marter*, 144 USPQ 421.

In summary applicants must provide some numerical evidence to show criticality for the use of the claimed surfactant.

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"A reference is good not only for what it teaches but also for what one of ordinary skill might reasonably infer from the teachings. *In re Opprecht* 12 USPQ 2d 1235, 1236 (CAFC 1989); *In re Bode* USPQ 12; *In re Lamberti* 192 USPQ 278; *In re Bozek* 163 USPQ 545, 549 (CCPA 1969); *In re Van Mater* 144 USPQ 421; *In re Jacoby* 135 USPQ 317; *In re LeGrice* 133 USPQ 365; *In re Preda* 159 USPQ 342 (CCPA 1968)".

Evidence of unexpected results must be clear and convincing. *In re Lohr* 137 USPQ 548.

Evidence of unexpected results must be commensurate in scope with the subject matter claimed.

In re Linder 173 USPQ 356.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Marcheschi whose telephone number is (703) 308-3815. The examiner can be normally be reached on Monday through Thursday between the hours of 8:30-6:00 and every other Friday between the hours of 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Mark L. Bell, can be reached at (703) 308-3823.

Amendments can also be sent by fax to the numbers set forth below:

For after final amendments, the fax number is (703) 872-9311;

For non-final amendments, the fax number is 703 872-9310.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Michael Marcheschi

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7/03


MICHAEL MARCHESCHI
PRIMARY EXAMINER